What is claimed is:

1. A charge transporting material comprising an organic matrix and an organometallic dopant, wherein said charge transporting material has a higher conductivity than undoped organic matrix.

2. The charge transporting material of claim 1 wherein said charge transporting material is an electron transporting material.

3. The charge transporting material of claim 1 wherein said charge transporting material is a hole transporting material.

4. The charge transporting material of claim 1 wherein said dopant is stable to oxidation or reduction.

5. The charge transporting material of claim 1 wherein said dopant decomposes to redox inactive materials upon oxidation or reduction.

6. An electron transporting material comprising an organic matrix and an organometallic dopant, wherein said dopant is capable of transferring electrons to said organic matrix, and wherein said electron transporting material has a higher conductivity than undoped organic matrix.

7. The electron transporting material of claim 6 wherein said dopant has an ionization potential within about 0 to about 0.5 eV of the LUMO energy level of said organic matrix.

8. The electron transporting material of claim 6 wherein said dopant has an ionization potential lower than the LUMO energy level of said organic matrix.

9. The electron transporting material of claim 6 wherein said dopant is stable in oxidized form.

10. The electron transporting material of claim 6 wherein said dopant decomposes to redox inactive materials upon oxidation.

11. The electron transporting material of claim 6 wherein said dopant is present in said organic matrix in an amount of about 0.05 to about 25 percent by weight.

12. The electron transporting material of claim 6 wherein said organic matrix comprises unsaturated hydrocarbons, unsaturated N- and O-containing heterocycles, or metal complexes.

13. The electron transporting material of claim 6 wherein said organic matrix comprises phenanthrolines, carbazoles, oxidiazoles, triazoles, triazines, imidazoles, or benzimidazoles.

14. The electron transporting material of claim 6 wherein said organic matrix comprises bathocuprione, aluminum tris(8-hydroxyquinoline), 4,4'-dicarbazolyl-biphenyl, octaphenylcyclooctatetraene, zirconium tetra(8-hydroxyquinoline), hafnium tetra(8-hydroxyquinoline), 3-phenyl-4-1-naphthyl-5-phenyl-1,2,4-triazole, or 3-(*p*-tertiary butyl-phenyl)-4-(*p*-biphenyl)-1,2,-oxidiazole.

15. The electron transporting material of claim 6 wherein said organic matrix comprises a polymer.

16. The electron transporting material of claim 15 wherein said dopant is covalently attached to said polymer.

17. The electron transporting material of claim 15 wherein said polymer is a cyano-substituted polyphenylenevinylene, an oxidiazole-containing polymer, or a triazole-containing polyer.

18. A hole transporting material comprising an organic matrix and an organometallic dopant, wherein said dopant is capable of transferring holes to said organic matrix, wherein said hole transporting material has higher conductivity than undoped organic matrix.

19. The hole transporting material of claim 18 wherein said organic matrix has an ionization potential within about 0 to about 0.5 eV of the LUMO energy level of said dopant.

20. The hole transporting material of claim 18 wherein said organic matrix has an ionization potential less than the LUMO energy level of said dopant.

21. The hole transporting material of claim 18 wherein said dopant is stable in reduced form.

22. The hole transporting material of claim 18 wherein said dopant is decomposed to redox inactive materials upon reduction.

23. The hole transporting material of claim 18 wherein said dopant is present in said organic matrix in an amount of about 0.05 to about 25 percent by weight.

24. The hole transporting material of claim 18 wherein said organic matrix comprises triarylamines, phthalocyanines, metal phthalocyanines, porphryins, metal porphyrins, indolocarbazoles, metal complexes, iminostilbene containing compounds, or carbazole containing compounds.

25. The hole transporting material of claim 18 wherein said organic matrix comprises TPD, α-NPD, or β-NPD.

26. The hole transporting material of claim 18 wherein said organic matrix comprises a polymer.

27. The hole transporting material of claim 18 wherein said dopant is covalently attached to said polymer.

28. The hole transporting material of claim 27 wherein said polymer is a polyphenylenevinylene, polyvinylcarbazole, or triarylamine pendant polymer.

29. A method for selecting an organometallic dopant for increasing conductivity of an organic matrix of an electron transporting material, said method comprising:

determining the ionization potential of said dopant;

determining the LUMO energy level of said organic matrix; and

selecting said dopant if said ionization potential is lower than said LUMO energy level, or if said ionization potential is within about 0 to about 0.5 eV of said LUMO energy level.

30. A method for selecting an organometallic dopant for increasing conductivity of an organic matrix of a hole transporting material, said method comprising:

determining the ionization potential of said organic matrix;

determining the LUMO energy level of said dopant; and

selecting said dopant if said ionization potential is lower than said LUMO energy level, or if said ionization potential is within about 0 to about 0.5 eV of said LUMO energy level.

31. A charge transporting material comprising an organic matrix and a dopant, wherein said dopant is an organometallic compound comprising at least one cyclopentadienyl ligand optionally substituted by one or more substituents selected from H, an electron withdrawing substituent, or an electron donating substituent.

32. The charge transporting material of claim 31 wherein said dopant comprises a transition metal.

33. The charge transporting material of claim 31 wherein said charge transporting material is an electron transporting material.

34. The charge transporting material of claim 31 wherein said charge transporting material is a hole transporting material.

35. The charge transporting material of claim 31 wherein said cyclopentadienyl ligand is substituted by at least one electron withdrawing substituent or electron donating substituent.

36. A charge transporting material comprising an organic matrix and a dopant, wherein said dopant is an organometallic compound comprising at least one arene ligand optionally substituted by one or more substituents selected from H, an electron withdrawing substituent, or an electron donating substituent.

37. The charge transporting material of claim 36 wherein said dopant comprises a transition metal.

38. The charge transporting material of claim 36 wherein said charge transporting material is an electron transporting material.

39. The charge transporting material of claim 36 wherein said charge transporting material is a hole transporting material.

40. The charge transporting material of claim 36 wherein said arene ligand is substituted by at least one electron withdrawing substituent or electron donating substituent.

41. A charge transporting material comprising an organic matrix and a dopant, wherein said dopant is an organometallic compound comprising at least one carborane ligand optionally substituted by one or more substituents selected from H, an electron withdrawing substituent, or an electron donating substituent.

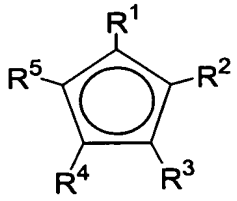
42. The charge transporting material of claim 41 wherein said dopant comprises a transition metal.

43. The charge transporting material of claim 41 wherein said charge transporting material is an electron transporting material.

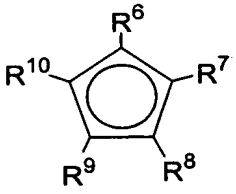
44. The charge transporting material of claim 41 wherein said charge transporting material is a hole transporting material.

45. The charge transporting material of claim 41 wherein said carborane ligand is substituted by at least one electron withdrawing substituent or electron donating substituent.

46. A charge transporting material comprising an organic matrix and a dopant, wherein said dopant is a metallocene having the formula $M(L^1)(L^2)$, wherein L^1 has the formula:



and L^2 has the formula:



wherein:

each R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, and R^{10} is, independently, H, an electron withdrawing substituent, or an electron donating substituent; and

M is a metal atom.

47. The charge transporting material of claim 46 wherein M is a transition metal.

48. The charge transporting material of claim 46 wherein M is Fe, Co, or Cr.

49. The charge transporting material of claim 46 wherein at least one R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, and R^{10} is an electron withdrawing substituent.

50. The charge transporting material of claim 46 wherein at least one R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, and R^{10} is an electron donating substituent.

51. The charge transporting material of claim 46 wherein at least one R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, and R^{10} is alkyl, alkoxy, amino, mercapto, or phosphino.

52. The charge transporting material of claim 46 wherein at least one R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, and R^{10} is aryl, cyano, nitro, carbonyl, tricyanoethenyl, or perfluoroalkyl.

53. The charge transporting material of claim 46 wherein at least one R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, and R^{10} is halogen.

54. The charge transporting material of claim 46 wherein L^1 and L^2 are covalently linked by a linking group.

55. The charge transporting material of claim 46 wherein said linking group comprises an alkyl, aryl, or silyl group.

56. The charge transporting material of claim 46 wherein said charge transporting material is an electron transporting material.

57. A charge transporting material comprising an organic matrix and a dopant, wherein said dopant has the formula $M(Ar)_4$, wherein M is a metal atom, Ar is an aryl

group substituted by one or more R^{11}, wherein each R^{11} is, independently, H, an electron withdrawing substituent, or an electron donating substituent.

58. The charge transporting material of claim 57 wherein M is a transition metal.

59. The charge transporting material of claim 57 wherein M is a Group 5, 6, 7, or 8 transition metal.

60. The charge transporting material of claim 57 wherein M is V or Os.

61. The charge transporting material of claim 57 wherein Ar is phenyl, naphthyl, biphenyl, anthracenyl, or fluorenyl.

62. The charge transporting material of claim 57 wherein at least one R^{11} is an electron withdrawing group.

63. The charge transporting material of claim 57 wherein at least one R^{11} is an electron donating group.

64. The charge transporting material of claim 57 wherein at least one R^{11} is alkyl, alkoxy, amino, mercapto, or phosphino.

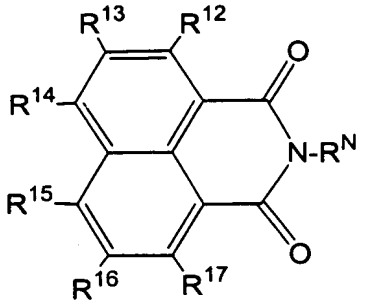
65. The charge transporting material of claim 57 wherein at least one R^{11} is halogen.

66. The charge transporting material of claim 57 wherein at least one R^{11} is aryl, cyano, nitro, carbonyl, tricyanoethenyl, or perfluoroalkyl.

67. The charge transporting material of claim 57 wherein said charge transporting material is an electron transporting material.

68. The charge transporting material of claim 57 wherein said charge transporting material is a hole transporting material.

69. A charge transporting material comprising an organic matrix and a dopant, wherein said dopant has the formula:



wherein each R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, and R^N is, independently, H, an electron withdrawing substituent, or an electron donating substituent.

70. The charge transporting material of claim 69 wherein at least one R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, and R^N is an electron withdrawing substituent.

71. The charge transporting material of claim 69 wherein at least one R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, and R^N is an electron donating substituent.

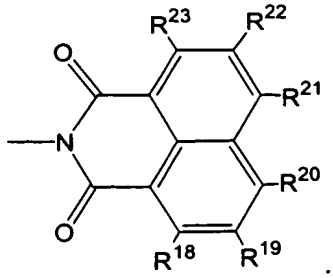
72. The charge transporting material of claim 69 wherein at least one R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, and R^N is alkyl, alkoxy, amino, mercapto, or phosphino.

73. The charge transporting material of claim 69 wherein at least one R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, and R^N is halogen.

74. The charge transporting material of claim 69 wherein at least one R^{12}, R^{13}, R^{14}, R^{15}, R^{16}, R^{17}, and R^N is aryl, cyano, nitro, carbonyl, tricyanoethyenyl, or perfluoroalkyl.

75. The charge transporting material of claim 69 wherein R^N is aryl, alkyl, or perfluoroalkyl.

76. The charge transporting material of claim 69 wherein R^N is a substituent of the formula:



wherein:

each R^{18}, R^{19}, R^{20}, R^{21}, R^{22}, and R^{23} is, independently, H, an electron withdrawing substituent, or an electron donating substituent.

77. The charge transporting material of claim 69 wherein said charge transporting material is a hole transporting material.

78. A charge transporting material comprising an organic matrix and a dopant, wherein said dopant is incapable of transferring charge to said organic matrix except when said dopant is optically excited.

79. The charge transporting material of claim 78 wherein said charge transporting material is an electron transporting material.

80. The electron transporting material of claim 78 wherein said optically excited dopant transfers electrons to said organic matrix.

81. The electron transporting material of claim 78 wherein said dopant is chemically altered upon oxidation.

82. The electron transporting material of claim 78 wherein said dopant is an organometallic compound comprising Ir, Re, Os, Pt, or Au.

83. An organic light emitting device comprising the charge transporting material of claim 1.

84. An organic light emitting device comprising the electron transporting material of claim 6.

85. An organic light emitting device comprising the hole transporting material of claim 18.

86. An organic light emitting device comprising the charge transporting material of claim 31.

87. An organic light emitting device comprising the charge transporting material of claim 36.

88. An organic light emitting device comprising the charge transporting material of claim 41.

89. An organic light emitting device comprising the charge transporting material of claim 46.

90. An organic light emitting device comprising the charge transporting material of claim 57.

91. An organic light emitting device comprising the charge transporting material of claim 69.

92. An organic light emitting device comprising the charge transporting material of claim 78.

93. A method for increasing the power efficiency of an organic light emitting device comprising incorporating in said device a charge transporting material according to claim 1.

94. A method for increasing the efficiency of an organic light emitting device comprising incorporating in said device a electron transporting material according to claim 6.

95. A method for increasing the efficiency of an organic light emitting device comprising incorporating in said device a hole transporting material according to claim 18.

96. A method for increasing the efficiency of an organic light emitting device comprising incorporating in said device a charge transporting material according to claim 31.

97. A method for increasing the efficiency of an organic light emitting device comprising incorporating in said device a charge transporting material according to claim 36.

98. A method for increasing the efficiency of an organic light emitting device comprising incorporating in said device a charge transporting material according to claim 41.

99. A method for increasing the efficiency of an organic light emitting device comprising incorporating in said device a charge transporting material according to claim 46.

100. A method for increasing the efficiency of an organic light emitting device comprising incorporating in said device a charge transporting material according to claim 57.

101. A method for increasing the efficiency of an organic light emitting device comprising incorporating in said device a charge transporting material according to claim 69.

102. A method for increasing the efficiency of an organic light emitting device comprising incorporating in said device a charge transporting material according to claim 78.